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AUTHOR Hodges, Riley; And Others
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ABSTRACT

Assessment is a cornerstone of the Kentucky Education Reform Act of 1990 (KERA), and development of appropriate assessments for grades 4, 8, and 12 has been a major focus of KERA implementation. This paper explores the development of performance events, portfolio assessments, and open-ended questions, with an emphasis on open-ended questions and their scoring. At present, the state scoring guide places a 68% emphasis on the open-ended questions included in the KERA assessments. The open-ended questions of the KERA involve students working individually or together in groups to solve simulated real-life problems. The development of the open-ended questions begins with central organizers and proceeds through the development of essential questions and the formation of a performance guideline. The rubric developed to score open-ended questions must be clear, fair, and reliable. The development of open-ended questions will realign ideas and priorities in the classroom, a change that is the real challenge for the future. Appendix A consists of informational guides and handouts. Appendix B lists KERA goals and outcomes. Appendix C shows sample goals and outcomes, and Appendix D contains sample tests and scoring guides. A list of 14 suggested readings is attached. (Contains nine references.) (SLD)

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TRANSITION TO TRANSFORMATION: OPEN-ENDED QUESTIONS

by

Riley Hodges
Graduate Education/Professor of Graduate Education
Union College
Barbourville, Kentucky

Lee Hodges
Graduate Education/Associate Professor of Graduate Education
Union College
Barbourville, Kentucky

William E. Bernhardt
Graduate Education/Graduate Dean and Professor of Graduate Education
Union College
Barbourville, Kentucky

DESCRIPTION

The centerpiece of The Kentucky Education Reform Act of 1990 is made manifest in six learning goals and seventy-five learner outcomes. The focus of this paper is on developing appropriate assessment tools - especially performance events, open-ended questions, and portfolio assessments. A special concentration on open-ended questions and corresponding scoring rubrics is given.

> "Each child, every child, in this Commonwealth must be provided with an equal opportunity to have an adequate education."
>
> Supreme Court Opinion
> **(Rose v. Council for Better Education, Inc., 1989)**

Introduction

The design and implementation of challenging, stimulating learning experiences, is central to educating all children. Actively engaging Kentucky's students in the learning process, coupled with powerful assessments which identify learning growth and provide direction for future instruction, emanate from a curriculum that is focused on Kentucky's learner goals and outcomes. A curriculum assessment that measures the learner goals and objectives and the implementation of that curriculum are the crucial component that prepares each and every student to be successful in life. The framework for this assessment and the subsequent assessment itself is derived from the Kentucky Education Reform Act of 1990 (KERA). (KRS158.6451 (4).

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History of KERA

In June, 1989, the Kentucky Supreme Court ruled the public school system in Kentucky unconstitutional. The responsibility to establish a system is the sole responsibility of the General Assembly. The General Assembly of the State of Kentucky must monitor the system so that it is maintained in a constitutional manner. The General Assembly is responsible for establishing a system and supervising it so that there is no waste, duplication, or mismanagement at any level.

The original Kentucky Constitution was adopted in 1891. Section 186 said that funds for common schools were to be distributed on the basis of the population of school age children in each district, whether or not they were enrolled in school. This led to an inequity where children not in attendance were providing funds for the school districts. In 1941 this inequity was first addressed. It was decided that 10% of the total school funds could be distributed on a basis other than population. Section 186 was amended again in 1949 to increase the amount of equalization to 25% of the total funds. In 1953, the General Assembly was authorized to establish the method of distribution of school funds. The Minimum Foundation Program was established in 1954 to provide funds to further address the inequity in school funding. However, insufficient funds were appropriated for the program.

A landmark decision of the Court of Appeals, Russman v. Luckett, 1965, required 100% full value assessment of property for taxation purposes. Additional decisions affecting education funding led to new laws enacted between 1956 and 1990.

A complaint was filed in Franklin Circuit Court in 1985 challenging the equity and adequacy of funds. In October, 1988, a judgment was rendered in Franklin Circuit Court stating that the General Assembly had failed to provide an efficient system of common schools and that the system of school financing was inefficient, in the constitutional sense, and was discriminatory. (In re Council for Better Education, Inc., No. 85-CI-1759 (Franklin Circuit Court, Division I, Ky. May 31, 1988, and Oct. 14, 1988)). On appeal, the Kentucky Supreme Court, in June, 1989, held the system of common schools in Kentucky was unconstitutional. The Supreme Court clearly stated that "This decision applies to the entire sweep of the system - all its parts and parcels...." (Rose v. Council for Better Education, Inc., 1989).

The leadership of the General Assembly, in July, 1989, appointed a Task Force on Education Reform. On March 7, 1990, the Task Force presented its final report. House Bill 940, Education Reform Act of 1990, was approved by the 1990 General Assembly; increases in revenue required for funding the reform were incorporated in the bill. This Reform Act required that by July 1, 1994, all property in the state to be assessed at 100 percent of fair cash value. Thus, KERA was born and charged with developing curriculum, to provide governance, finance, and to establish time lines for implementation. Within curriculum, goals and assessments of goals were to be developed. The governance section included specific restructuring activities. Finance established a fund which has become the most heavily financed fund in Kentucky: Support Education Excellence in Kentucky (SEEK). Time lines were to be specific and implemented as quickly as possible.

Philosophy and Mission

Within Kentucky, the mission of KERA is well known. Every school administrator, every school teacher, every ancillary personnel, will use all available resources to ensure for each child an internationally superior education. A love of learning through visionary leadership, vigorous stewardship, and exemplary services in alliance with schools, school districts, and other partners in the Commonwealth is a major commitment of the educational system. The following philosophy (Kentucky Department of Education, 1993) has been established in concert with groups of administrators, teachers, and concerned citizens:

PHILOSOPHY

WE BELIEVE
ALL CHILDREN CAN LEARN AT HIGH LEVELS, AND THEY

POSSESS A CURIOSITY AND DESIRE TO LEARN
RESPOND POSITIVELY TO SUCCESS AND ENTHUSIASM
DEVELOP AND LEARN AT DIFFERENT RATES
DEMONSTRATE LEARNING IN DIFFERENT WAYS
LEARN BY BEING ACTIVELY INVOLVED, BY TAKING RISKS, AND BY MAKING CONNECTIONS

SUCCESSFUL SCHOOLS ARE FOR STUDENTS, AND THEY

EXPECT A HIGH LEVEL OF ACHIEVEMENT
PROVIDE THE TIME AND INSTRUCTION TO ACHIEVE STUDENT SUCCESS
PROVIDE CONNECTIONS WITH HOME AND COMMUNITY EXPERIENCES
ENSURE A SAFE, POSITIVE ENVIRONMENT
CREATE OPPORTUNITIES TO EXPLORE AND GROW

EFFECTIVE INSTRUCTION FACILITATES LEARNING, AND IT

ADDRESSES IDENTIFIED OUTCOMES
ASSURES SUCCESS AND RISK TAKING
EMPLOYS A VARIETY OF EFFECTIVE TECHNIQUES TO ADDRESS LEARNING DIVERSITY
ALIGNS CURRICULUM, INSTRUCTION, AND ASSESSMENT
CONNECTS CURRICULAR OFFERINGS TO THE LIFE EXPERIENCES OF STUDENTS
ENCOURAGES SELF-DIRECTION AND LIFE-LONG LEARNING

Definitions

Open-Ended Questions - Involves students working individually, or together in groups, to solve simulated, real life problems. Requires higher thinking skills as shown in Bloom's Taxonomy of Educational Objectives.

Performance Events - Teacher made questions and/or text bank questions utilized to test concepts, precepts, generalizations, and conclusions.

Portfolio Assessment - A symbolic container for storing and displaying evidence of a student's knowledge and skills. More than just a container, it also embodies an attitude that assessment is dynamic and that the richest portrayals of student performance are based on multiple sources of evidence collected over time in authentic settings.

Rubric - A scoring guide for Open-Ended Questions. The word "rubric" literally means "rule". When utilized in connection with open-ended questions, it means "scoring guide". Two types of rubrics are used: holistic and analytic.

KERA - Kentucky Education Reform Act of 1990.

SEEK - Support Education Excellence in Kentucky - a fund established by the General Assembly.

Delimitations

The centerpiece of the Kentucky Education Reform Act of 1990 is manifested in six learning goals and seventy-five learner outcomes. The purpose of this paper is to show the development of appropriate assessment tools to measure KERA mandated activities. These tools are: performance events, open-ended questions, and portfolio assessments. Many questions have been raised related to the Reform Act: What are the goals of the Education Reform Act of 1990? What will happen to schools that are successful? What will happen to schools that do not improve? How will the Department of Education be different? What relationship is considered important in the Anti-Nepotism section as it concerns "relatives" of the school superintendent, local board members, or principal? Since some areas of the state are wealthier than others, does this mean that some school districts receive more state money for education than others? Though there are many questions that are raised by the focus of the Reform Act, the focus of this paper is to present a special concentration on open-ended questions with corresponding rubrics.

Related Literature

A Guide to the Kentucky Education Reform Act of 1990, prepared by Miller, Noland, and Schaaf of the Legislative Research Commission is an invaluable introductory pamphlet in determining the history and overall goals of the Reform Act. The questions and answers section provide much insight into the thinking of the General Assembly at the time the bill was developed. (Miller, Noland & Schaaf, 1990).

The National Association of State Directors of Teacher Education and Certification second edition book entitled: (NASCED Outcome-Based Standards and Portfolio Assessment, 1994), gives a complete guide on Outcome-based teacher education standards for the elementary, middle and high school levels.

Transformations: Kentucky's Curriculum Framework, Volume I and II, 1993, is a curriculum framework book developed in response to KRS 158.6451(4) which addresses the requirements of the curriculum framework. It is a working document, changing each year to meet the state's six learning goals and seventy-five learner outcomes. The document will continue to change as KERA progresses. The main function of the framework is to help districts and schools design the curriculum they envision for their students.

Many Kentucky agencies have produced informational guides and handouts which are tied to KERA. Some of these will be listed in Appendix A. There are state pamphlets, restructuring guides, one or two page pieces of literature that also could be mentioned in this section on related literature.

ASSESSMENT

The assessment program reflects a new set of standards in education. The state expects more from all students, and by the Reform Act, is committed to helping them meet these higher standards. Each student will be tested in grades 4, 8, and 12 as mandated by the Kentucky Education Reform Act of 1990.

In the past, achievement tests were used, to measure student knowledge. In conformance with KERA, tests now measure, not only what students know, but what they can do with what they know. In other words, the student should be able to apply knowledge in situations that they will face throughout their lives. The annual assessment has three parts:

Performance Events
Multiple Choice Questions True-False Questions Short Essay Questions Completion Questions

Open-Ended Questions
Students work together in groups or individually to solve simulated, real-life problems

Portfolios
A presentation of each student's best work collected throughout the year

No child "fails". The student is placed into one of four performance levels: novice, apprentice, proficient, or distinguished. The novice level recognizes the student as a beginner, not a failure.

Information on restructuring which districts have received from the State Department of Education, has included many publications. Of, perhaps, most importance has been "Transformation, Kentucky's Curriculum Framework" Vol. I and Vol. II. (Kentucky Department of Education, 1993). Volume I contains the goals, outcomes, and the expansion of these goals and outcomes from elementary school to middle school to secondary school areas. (Appendix B). Demonstrators, learning links, related concepts, teaching and assessment strategies, ideas for incorporating community resources, activities, and reflections are included. For each of the six goals and seventy-five learner outcomes an explanatory format is presented. This consists of: the name of the goal, the learner outcome with links and related concepts provided, elementary school-middle school-high school demonstrators provided, samples of teaching assessment strategies, ideas for incorporating community resources, applications across the curriculum, and reflections. (Examples in Appendix C).

Volume II centers on the main processes that are utilized by both local districts and schools to develop curriculum and instruction that meet their needs. Models, samples, examples, and guides are included to aid teachers, school based councils, and curriculum writers to bring their visions to a reality base. Sections contained within Volume II are transforming the school environment, alternative use of school time, local curriculum development guide, and resources.

To recap, Volume I expanded learning goals and learner outcomes to include student expectations at various levels. Volume II aids the teacher and others to develop curriculum, instruction, and assessment in meeting unique needs of students. It is the assessment area with which this paper will be involved, especially the assessment technique labeled Open-Ended Questions.

OPEN-ENDED QUESTIONS

"All students must be able to think and solve problems at the level originally required of a few," is a common saying of those involved in business. Expectations and assumptions have changed from "our students are not capable of achieving those high expectations" to "all students can learn at high levels, higher than has ever been expected of most students." If we continue the way we have in the past and return to the mausoleums of learning and the classrooms we have known, nothing will change. Even with the best map, change is difficult. It will not appear, full-blown, immediately. A computer program called Morph can change a mouse into an eagle, but it takes several steps to do so. Just as it takes several steps to morph a mouse into an eagle, so it may take many steps to transform schools. There will be no cookbook approach. An essentialist will say: "What a child learns must be challenging and rigorous." The essentialist is correct. However, the how, where, and when vary greatly among students. Students' needs are varied, and schools must provide alternative learning opportunities while assisting students in making connections. In other words, the learning must be "true

to life," which means: learning that really matters, contexts that are authentic, and demonstrations that engage students in role performances. (Spady, 1988). Open-Ended questions assess these very things. As Oliver Wendell Holmes said: "The mind, stretched by a new idea, never goes back to its original dimension."

Beginning the Process

Vito Perrone, Director of Teacher Education, and Chair of Teaching Curriculum and Learning Environments, at Harvard University, said: "We must move assessment activities closer to the actual work of teachers and children...assessment should empower students as learners." (Perrone, 1991). Blue book essay examinations, standardized tests with bubbles scanned and graded quickly, multiple choice questions, true-false questions, completion questions, these assessment techniques have historically driven the curriculum. We couldn't exist without them. We use these tests as a means to give -end of course- grades, promote or retain students, tracking students, funding programs, and comparing states. Traditional assessment must be replaced with dynamic , authentic assessment, which provides a valuable, continuous, and meaningful documentary of student learning. Grant Wiggins said: "Good teaching is inseparable from good assessing." (Wiggins, 1989).

Beginning the Process: Organizers

Themes, problems, concepts, content, skills. . .these are central organizers with which teachers are familiar. Whether a teacher follows a particular philosophy or even a particular organizer, open-ended questions of an authentic nature can be utilized. These organizers are vehicles by which students are able to reach targeted outcomes. An organizer is not necessarily meant to be a fun activity, or allow students to concentrate on trivial knowledge that is irrelevant and useless. An Organizer provides organization for student learning.

The following questions should be asked:

Is the organizer developmentally appropriate?
- Where does the organizer allow the student to work?
  - In the upper levels of Bloom's Taxonomy
  - In the middle levels of Bloom's Taxonomy
  - In the lower levels of Bloom's Taxonomy
- Does the organizer require students to participate in activities in which they must apply learning in real situations?

Is the organizer broad and deep enough to allow students to have some flexibility in what they study?
Does the organizer encourage students to make connections between ideas?
Does the organizer prompt students to build on prior knowledge?
Does the organizer encourage students to demonstrate learning in a variety of ways?

Is the organizer intriguing to the students?
Does the organizer provoke student interest enough that they will invest time and effort to learn?
Does the organizer demand that students use their imagination?

Is the organizer focused on learning which can be transferred to issues which are current or will be essential in the future?
Does the learning attained by using this organizer make a difference in the student's life
Does the learning achieved through the use of the organizer apply to real-life situations?

Is the organizer going to require students to be involved in a rigorous study of content knowledge and practice of life skills?
Does the organizer ask students to learn essential information instead of memorization of trivial facts?
Does the organizer allow the practice of valuable skills?

Is the organizer designed to be distributed into a set of essential questions?
Does the organizer allow for asking questions like "how", "why," and "what?"

These tables have been adapted from the Organizer Rubric shown on page 68, Vol. II, Transformation, Kentucky Framework. (Kentucky Department of Education, 1993).

Criteria Used in Developing Open-Ended Questions

Using needs assessments, a major focus of what is to be taught is determined. An organizer guide is built to guide the teacher in the process of asking the questions, then the essential questions become the scope and sequence of the organizer.

The essential questions, when possible, should be developed with student input, they should include no more than four or five questions, and they should be posted in the classroom. In relation to developing the essential questions, the following criteria should be utilized:

1.0 The questions should be written so every person in the class can understand them.
2.0 The questions should have no obvious "right" answer.
3.0 The questions should reflect higher order thinking. They should require synthesis, analysis, and evaluative judgment. 4.0 The questions should be arranged in a logical sequence.
5.0 The questions should emphasize concepts while requiring students to use knowledge in developing answers.
6.0 The questions should cause the students' learning to uncover and recover important ideas.
7.0 The questions should be posed in a realistic time frame.

After determining the focus, building the organizer guide, developing essential questions with corresponding criteria, a culminating performance guideline needs to be formed. Drawing from Theodore Sizer's work, Horace's School, (Sizer, 1992) the following guidelines are offered in Developing a Culminating Performance:

*The culminating performance should
*Reflect genuinely useful skills and knowledge.
*Raise issues that are both personal and universal. Student performance of the activity should show the use of a thoughtful mind.
*Allow flexibility in student preparation and presentation.
*Give students a reasonable choice of topics, allowing them to investigate areas of individual interest.
*Demand intense work and preparation on the part of students. It should require persistence, organization, and inquiry skills associated with learning goals.
*Allow time for students to accomplish serious, comprehensive work.
*Prompt students to stretch their minds, and make connections. It should put knowledge in a sensible context which supports the value of the content learned. It should assess several unit outcomes.

The foregoing information is designed to aid teachers in developing open-ended questions. The assessment of the open-ended question is called a rubric.

THE RUBRIC

Introduction

"Rule" is the literal meaning of the word rubric. When used in connection with an open-ended question, it means "scoring guide". There are two types of rubrics: holistic and analytic. A holistic rubric is used to measure the overall effect of response with a set of appropriate guidelines. It is most commonly used for assessments that require creativity or artistic

merit to be demonstrated by the student. One looks at the finished product as a whole rather than breaking it apart and assessing each skill. A holistic rubric is not quantitative. An analytic rubric consists of points assigned to various elements to be looked for in a written response. It is used to evaluate specific skills used by the student to complete performance tasks. It provides data which will aid the classroom teacher in determining students' strengths and deficiencies in each of the categories of skills being measured. Analytic rubrics are totally quantitative. In an analytic rubric four scores are given:

EXCELLENT OR HIGH PASS (3)	AVERAGE OR PASS (2)	LOW OR NO PASS (1)	NO RESPONSE (0)

Write the Rubric First

Once a teacher has reviewed the levels at which students are working and has isolated the skills that are to be taught, the rubric can be written. Creating rubrics can be just as time consuming and difficult as developing the task itself. An attempt is made to clarify a teacher's thinking relative to the lesson to be taught (the teacher becomes aware of what he/she expects students to have mastered), explain to students (and parents) what is expected of them on the task, define what different levels of performance will look like, enable scores to be used fairly, consistently, without biased, and accurately in evaluating the task, and place a value on different performance levels.

It is essential that rubrics reflect fairness and reliability. In order to achieve these goals a rubric must be established which enables scorers to be consistent in their ratings and students to be consistent in their performances.

Rubric Criteria

1.0 Be aware of process or product is the primary focus.

2.0 Identify specific components of the assignment.

3.0 The scoring rubric should be clear to the student and easy to use, usually no more than one page in length.

4.0 Only important dimensions of the assignment should be included.

5.0 Steps should be sequenced in an acceptable order of performance.

General Rubric

SCORE	DESCRIPTION
4	*The student completes all important components of the task and communicates ideas clearly *The student demonstrates in-depth understanding of the relevant concepts and/or processes. *Where appropriate, the student chooses more efficient and/or sophisticated processes. *Where appropriate, the student offers insightful interpretations or extensions (generalizations, applications, analogies).
3	*The student completes most important components of the task and communicates those clearly. *The student demonstrates understanding of major concepts even though he/she overlooks or misunderstands some less important ideas or details.
2	*the student completes some important components of the task and communicates those clearly. *The student demonstrates that there are gaps in his/her conceptual understanding.
1	*The student is unable to generate strategy, or answer may display only recall effect. Answer lacks clear communication. *Answer may be totally incorrect or irrelevant.
0	Blank

(Examples of tests and rubrics are shown in Appendix D).

SUMMARY AND CONCLUSIONS

The purpose of this paper is to present information based on new concepts to teaching and learning: performance events, portfolio development, and open-ended questions with corresponding rubrics. A focus was made on open-ended questions: the "how-to" of developing and scoring them. Kentucky's

assessment of its students are made at the end of the fourth grade, the eighth grade and the twelfth grade. Assessment tests have been developed directly related to instruction presented in the classroom. At the present time the state scoring guide consists of the following: Sixty-eight percent emphasis is placed on open-ended questions, 12% on performance events, and 20% on portfolio development.

The development of performance events, portfolio development, and open-ended questions are changes in traditional educational ideas. Depending on individual teacher situations, one teacher may find these new precepts frightening and threatening, while another teachers may find them stimulating and a fresh approach to educating the youth of the United States. People become educators for all kinds of reasons, some dealing with personal comfort. Personal comfort is always compromised by change. Change requires a person to make some response. The response may be to avoid change and then face the consequences of the decision to change or to not change.

Following the bibliography are four appendices. Appendix A consists of selected informational guides and handouts. Appendix B is the list of Kentucky's Learning Goals and Learner Outcomes, supplied by the Kentucky State Department of Education. Appendix C shows sample goals and learner activities with elementary, middle school, and high school demonstrators. In Appendix D, examples of sample tests and scoring guides for various curriculum areas and grade levels are presented.

Performance events, portfolio development, and open-ended questions development will cause a realignment of ideas, thoughts, and priorities in the classroom. These are the challenges for the future.

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APPENDIX A

INFORMATIONAL GUIDES AND HANDOUTS

"Awareness Project" by Freeman.

"Character and Value Education: Teaching Strategies" by Griesser, et al.

"Embellishing the Performance Assessment" no author given.

"Designing Authentic Performance Assessment Tasks" by Gong and Ochs.

"Inclusion Workshop" by L. Hodges.

"Inservice Workshop with Assessment Focus: Open-Ended Questions" by R. Hodges.

"KERA Sharing Centers" by Pigue and Boysen.

"Kentucky's Education Professional Standards Board Council for New Teacher Performance Standards" no author given.

"Performance Task Student Direction/Response Form" no author given.

"Regional Service Center Configuration", no author given.

"Task Force on High School Restructuring" by Pack.

Appendix B

Kentucky's Learning Goals And Learner Outcomes

The centerpiece of Kentucky's education reform effort is its vision of what students should know and be able to do as a result of their school experience. Every aspect of the reform movement is designed to promote student attainment of these goals and to measure our progress in helping them to do so.

Assumption underlying KERA

All students are capable of learning.

The expectations for students are set forth as the six learning goals of KERA. These goals led to the development of 75 learner outcomes that characterize student achievement of the goals. *All* Kentucky students are expected to achieve the goals and outcomes.

1. Students are able to use basic communication and mathematics skills for purposes and situations they will encounter throughout their lives.

1.1 Students use research tools to **locate sources** of information and ideas relevant to a specific need or problem.

1.2 Students construct meaning from a variety of print materials for a variety of purposes through **reading**.

1.3 Students construct meaning from messages communicated in a variety of ways for a variety of purposes through **observing**.

1.4 Students construct meaning from messages communicated in a variety of ways for a variety of purposes through **listening**.

1.5 Students communicate ideas by **quantifying** with whole, rational, real and/or complex numbers.

1.6 Students manipulate information and communicate ideas with a variety of **computational** algorithms.

1.7 Students organize information and communicate ideas by **visualizing** space configurations and movements.

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1.8 Students gather information and communicate ideas by **measuring**.

1.9 Students organize information and communicate ideas by **algebraic and geometric reasoning** such as relations, patterns, variables, unknown quantities, deductive and inductive processes.

1.10 Students organize information through development and use of **classification** rules and classification **systems.**

1.11 Students communicate ideas and information to a variety of audiences for a variety of purposes in a variety of modes through **writing**.

1.12 Students communicate ideas and information to a variety of audiences for a variety of purposes in a variety of modes through **speaking**.

1.13 Students construct meaning and/or communicate ideas and emotions through the **visual arts**.

1.14 Students construct meaning and/or communicate ideas and emotions through **music**.

1.15 Students construct meaning from and/or communicate ideas and emotions through **movement**.

1.16 Students use computers and other **electronic technology** to gather, organize, manipulate, and express information and ideas.

2. Students shall develop their abilities to apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies, practical living studies, and vocational studies to what they will encounter throughout their lives.

Science

2.1 Students use appropriate and relevant **scientific skills** to solve specific problems in real-life situations.

2.2 Students identify, compare, and contrast **patterns** and use patterns to understand and interpret past and present events and predict future events.

2.3 Students identify and describe **systems**, subsystems, and components and their **interactions** by completing tasks and/or creating products.

2.4 Students use **models and scale** to explain or predict the organization, function, and behavior of objects, materials, and living things in their environment.

2.5 Students understand the tendency of nature to remain **constant** or move toward a steady state in closed systems.

2.6 Students complete tasks and/or develop products which identify, describe, and direct **evolutionary change** which has occurred or is occurring around them.

Mathematics

2.7 Students demonstrate understanding of **number concepts**.

2.8 Students demonstrate understanding of concepts related to **mathematical procedures**.

2.9 Students demonstrate understanding of concepts related to **space and dimensionality**.

2.10 Students demonstrate understanding of **measurement** concepts.

2.11 Students demonstrate understanding of **change** concepts on patterns and functions.

2.12 Students demonstrate understanding of concepts related to **mathematical structure**.

2.13 Students demonstrate understanding of **data** concepts related to both certain and uncertain events.

Social Studies

2.14 Students recognize issues of justice, equality, responsibility, choice, and freedom and apply these **democratic principles** to real-life situations.

2.15 Students recognize varying **forms of government** and address issues of importance to citizens in a democracy, including authority, power, civic action, and rights and responsibilities.

2.16 Students recognize varying **social groupings and institutions** and address issues of importance to members of them, including beliefs, customs, norms, roles, equity, order, and change.

2.17 Students interact effectively and work cooperatively with the **diverse ethnic and cultural groups** of our nation and world.

2.18 Students make **economic decisions** regarding production and consumption of goods and services related to real-life situations.

2.19 Students recognize the **geographic interaction between people** and their surroundings in order to make decisions and take actions that reflect responsibility for the environment.

2.20 Students recognize continuity and change in **historical events, conditions, trends, and issues** in order to make decisions for a better future.

2.21 Students observe, analyze, and interpret human behaviors to acquire a better understanding of self, others, and **human relationships.**

Arts and Humanities

2.22 Students **create products and make presentations** that convey concepts and feelings.

2.23 Students **analyze** their own and others' artistic **products and performances.**

2.24 Students **appreciate creativity and values of the arts** and the humanities.

2.25 Through their productions and performances or interpretation, students show an understanding of the **influence of time, place, personality, and society on the arts and humanities**.

2.26 Students recognize **differences and commonalties in the human experience** through their productions, performances, or interpretations.

2.27 Students complete tasks, make presentations, and create models that demonstrate awareness of the **diversity of forms, structures, and concepts across languages** and how they may interrelate.

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2.28 Students understand and communicate in a **second language**.

Practical Living

2.29 Students demonstrate effective individual and **family life skills**.

2.30 Students demonstrate effective decision-making and evaluative **consumer skills**.

2.31 Students demonstrate skills and self-responsibility in understanding, achieving, and maintaining **physical wellness**.

2.32 Students demonstrate positive strategies for achieving and maintaining **mental and emotional wellness**.

2.33 Students demonstrate the ability to assess and access health systems, services and resources available in their community which maintain and promote **healthy living** for its citizens.

2.34 Students perform **psychomotor skills** effectively and efficiently in a variety of settings.

2.35 Students demonstrate knowledge, skills, and values that have lifetime implications for involvement in **physical activity**.

Vocational Studies

2.36 Students demonstrate strategies for selecting **career path** options.

2.37 Students produce and/or make presentations that communicate school-to-work/post-secondary **transition skills**.

2.38 Students demonstrate the ability to complete a **post-secondary opportunities search**.

3. Students shall develop their abilities to become self-sufficient individuals.

3.1 Students demonstrate **positive** growth in **self-concept** through appropriate tasks or projects.

3.2 Students demonstrate the ability to maintain a **healthy lifestyle.**

3.3 Students demonstrate the ability to be **adaptable and flexible** through appropriate tasks or projects.

3.4 Students demonstrate the ability to be **resourceful and creative**.

3.5 Students demonstrate **self-control and self discipline**.

3.6 Students demonstrate the ability to make decisions based on **ethical values**.

3.7 Students demonstrate the ability to **learn on one's own**.

4. Students shall develop their abilities to become responsible members of a family, work group, or community, including demonstrating effectiveness in community service.

4.1 Students effectively use **interpersonal skills**.

4.2 Students use **productive team membership** skills.

4.3 Students individually demonstrate **consistent, responsive, and caring behavior.**

4.4 Students demonstrate the ability to accept the **rights and responsibilities for self and others**.

4.5 Students demonstrate an understanding of, appreciation for, and sensitivity to a **multicultural and world view**.

4.6 Students demonstrate an **open mind to alternative perspectives.**

5. Students shall develop their abilities to think and solve problems in school situations and in a variety of situations they will encounter in life.

5.1 Students use **critical thinking** skills in a variety of situations that will be encountered in life.

5.2 Students use **creative thinking** skills to develop or invent novel, constructive ideas or products.

5.3 Students create and modify their understanding of a **concept** through organizing information.

5.4 Students use a **decision-making** process to make informed decisions among options.

5.5 Students use **problem-solving** processes to develop solutions to relatively complex problems.

6. Students shall develop their abilities to connect and integrate experiences and new knowledge from all subject matter fields with what they have previously learned and build on past learning experiences to acquire new information through various media sources.

6.1 Students address situations (e.g., topics, problems, decisions, products) from **multiple perspectives** and produce presentations or products that demonstrate a broad understanding. Examples of perspectives include: economic, social, cultural, political, historic, physical, technical, aesthetic, environmental, and personal.

6.2 Students use what they already know to **acquire new knowledge, develop new skills**, or **interpret new experiences**.

6.3 Students expand their understanding of **existing knowledge** (e.g., topic, problem, situation, product) by **making connections** with new and unfamiliar knowledge, skills, and experiences.

Goal 2: Apply Core Concepts and Principles

Learner Outcome 2.29: Students demonstrate effective individual and *family life skills*.

Learning Links: Dating/Marriage / Pregnancy / Birth Control / HIV/AIDS/STDs / Death and Grief / Divorce / Rape / Suicide / Abuse / Discipline / Self-control / Adoption / Baby-sitting / Day Care / Genatrics

Related Concepts: Communication Skills / Rights & Responsibilities in Interpersonal Relationships / Parenting / Conflict Resolution / Child Development / Sexuality / Human Life Cycle / Family Crisis / Family Violence / Personal Safety / Abstinence Skills

Elementary Demonstrators

- Determine situations that are abusive or unsafe.
- Demonstrate positive ways to resolve conflicts.
- Create solutions to problems that occur in family relationships.
- Examine different types of families and changes within families.
- Demonstrate appropriate ways to express feelings.
- Recognize rights and responsibilities in family relationships.
- Determine roles of family members.

Middle School Demonstrators

- Evaluate constructive and destructive family relationships in different types of families.
- Distinguish between rights and responsibilities in family relationships.
- Describe changes (e.g., physical, emotional, social) that occur during adolescence.
- Analyze effective practices which prevent Sexually Transmitted Diseases (STDs).
- Choose strategies for responding to sexual abuse and family violences.

High School Demonstrators

- Analyze lifestyle decisions that promote healthy family living.
- Apply skills that promote healthy relationships among family and friends.
- Analyze personal rights and responsibilities in family relationships.
- Evaluate the impact of sexual choices on the health and well-being of self and others.
- Analyze the impact of family planning on individual, family, and society.
- Assess parenting skills that lead to a nurturing family life.
- Interpret the impact of changes throughout the life cycle.
- Investigate protective strategies for dealing with sexual abuse and family violence.

Demonstrators should be read from bottom to top, but need not be demonstrated sequentially.

Sample Teaching/Assessment Strategies:

Collaborative Process: Cooperative Learning • **Community-Based Instruction**: Field Studies • **Continuous Progress Assessment**: Self-assessment • **Problem Solving**: Inquiry, Investigation, Simulation, Role-play, Interview • **Whole Language Approach** • **Writing Process**

These sample strategies offer ideas and are not meant to limit teacher resourcefulness. More strategies are found in the resource section.

Ideas for Incorporating Community Resources:

- Invite a lawyer, police officer, or spouse abuse representative to discuss dating and/or domestic violence.
- Visit one or more childcare centers to observe developmentally appropriate activities.
- Invite a community member from another culture (e.g., foreign exchange student) to visit the class and talk about family in his/her country of origin.
- Invite a social services or Family and Youth Service Center representative to class to discuss community agencies that offer assistance or protection to families or children.

Core Concept: Family Life and Parenting

Sample Elementary Activities

- Use a word processor to draft, revise, and finalize a story which portrays a real life conflict; include ways to resolve the problem. Discuss the effectiveness of the solutions. OE, P
- Brainstorm household chores/jobs. Chart the tasks each family member performs. OE
- Role-play ways to express personal feelings experienced in given situations. PE
- Make or draw a house in which your family members are placed. Display the house and discuss the similarities and differences with other households to examine types of families. OE
- Read a book/article where people are in safe and unsafe situations. List actions that have lead to both the safe and unsafe circumstances. Compare this to situations you might face. Determine what actions you could take. P
- Create and perform a skit that demonstrates rights and responsibilities of family members. OE
- Make a chart which lists likes and dislikes of family members. Analyze the lists to predict why certain problems occur in families. PE, OE

Applications Across the Curriculum

Language Arts
- Read stories about family relationships. Web the responsibilities of the family members. Create your own book about family members and their responsibilities toward other family members. P

Science
- Prepare a graphic representation (e.g., circle graphs, line graphs, histograms, charts) to describe survey information from your classmates regarding roles and responsibilities of family members. Compare it to a honeybee society. P

Mathematics
- Consider several household chores for which you feel you should be responsible and the allowance you think would be fair for each activity. Identify the basis for establishing the rate of allowance. OE

Social Studies
- Role-play family roles in agrarian and urban societies. PE

Arts and Humanities
- Create a soft sculpture of someone special to you. Promote a family life week during which the soft sculptures will be displayed. PE, P

Vocational Education
- Determine solutions to family-life problems resulting from a family crisis or change (e.g., illness, move, new baby, handicapped or elderly family member) by using problem-solving techniques. PE, OE
- Role-play solutions to sibling conflicts. Identify the consequences of each solution and determine if there are preferred actions. PE

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Core Concept: Family Life and Parenting

Sample Middle School Activities

- Simulate the responsibilities of parenthood by caring for an inanimate object (e.g., egg, two pound bag of flour) for an extended period of time and relate how being a parent would change the lifestyle of an adolescent. PE, P
- Write, perform, and critique a skit which communicates effective refusal skills . PE, OE, P
- Generate and role-play scenarios where adolescent issues/concerns (e.g., gossip, peer pressure, sexual relationships, sexual disease, exploitation) are resolved. P
- Use desktop publishing to write articles on blended families for the school newspaper. Include ways (e.g., communication, distribution of chores) to ease the transition. OE, P
- Design a poster on the physical, social, and emotional risks of becoming sexually active. Describe how the life of a young woman or man might change. PE, OE, P
- View a television program and determine the roles and responsibilities of each family member. Discuss and analyze why certain problems occur and how they can be resolved. OE, P
- View laser-disk technology dealing with teenage sexuality and discuss social concerns. OE, P
- Research community agencies that offer assistance or protection to families or children. Make a booklet that identifies the agencies and include services, addresses, and phone numbers. OE, P
- Gather information on prevention of Sexually Transmitted Diseases (STDs). Evaluate the accuracy and credibility of the data. PE, OE

Applications Across the Curriculum

Variations on a theme: Home Safety

Language Arts
- Write a play about home accidents and how to avoid them. PE, OE

Science
- Inventory the cleaning and painting supplies in your home. Assess current storage facilities for the products and design an alternative storage plan, if needed. PE

Mathematics
- Research the type and number of in-home accidents and design a plan to eliminate those risks in your home. PE, OE

Social Studies
- Research the history of first-aid procedures; create a visual on how they have changed (e.g., seizures, water safety, choking). P

Arts and Humanities
- Design posters for home-safety awareness and display in the community. PE
- Videotape the home-accident play and share with a class of elementary students. PE

Vocational Education
- Prepare a baby-sitter's manual emphasizing home safety and dealing with emergencies. PE, OE, P

Reflections

In a world where the rapid rate of change creates unstable factors affecting society from its inner nucleus to its outer core, the family is most at risk. Some futurists describe the family of today as the "shattered family." The increasing rate of divorce, corporate transfers, single parenthood, blended families, and aging parents is markedly changing the family unit.

Individuals go into parenting with little or no training and often with limited idea of what is expected of them. The seriousness of this condition is compounded if the parents are teenagers who have not yet assumed responsibility for their own lives.

Students need instruction in family life and parenting skills if they are to provide their children with a family infrastructure that supports positive growth and development. Family life skills is an outcome that dictates a fully articulated curriculum and must be threaded throughout the transformed academic curriculum.

Source: Toffler--Future Shock

Core Concept: Family Life and Parenting

Sample High School Activities

- Create an exhibit which focuses on lifestyles that promote healthy family living; display the exhibit in the local community. PE, P
- Brainstorm, by working in small groups, possible solutions to problems or situations involving family roles and responsibilities; select the most viable and defend the solution(s). OE, P
- Debate the use of contraceptives for planning parenthood and/or preventing HIV/AIDS/STDs. Consider cost, side-effects, convenience, and effectiveness as well as moral issues. PE, OE, P
- Investigate and submit a report on the potential financial, personal, and social costs of a citation for driving while under the influence (DUI); compile individual portfolios of articles. Develop and defend a position on driving while under the influence of alcohol or drugs. PE, OE, P
- Analyze and debate the pros and cons of prohibiting smoking at a high school versus assigning designated smoking areas. Make a video presentation. PE, P
- Volunteer to work with a community agency that addresses family violence. PE, OE, P

Applications Across the Curriculum

Language Arts
- Interview a cross section of single parents and their children for a series of articles for your school newspaper. Analyze effects of social and economic status, gender, age, cultural and/or ethnic heritage, educational level, and other factors on each parent-child relationship. Discuss coping mechanisms for single parents and their children, benefits and liabilities of living with or being a single parent, and other information of interest to the readers of your series. PE, P

Science
- Evaluate the reliability of the means (e.g., physical characteristics, personality traits, blood types, DNA mapping) by which paternity is determined. OE
- Research the effects of a chronic illness on familial relationships. Create and present a multimedia report of your findings. P

Mathematics
- Investigate the financial impact of divorce on a family with children ages 10 and 16 with two working parents. P

Social Studies
- Research family life in America from colonial times to the present. Using a multimedia presentation, show reasons changes have occurred in family structure. PE, P

Arts and Humanities
- Create and perform an improvisation where two family members must resolve a real life, family issue/problem. PE
- Create individual designs for a bulletin board depicting the impact of changes throughout the life cycle. Select the designs or "merged" design to be displayed in the library. PE

Vocational Education
- Plan and conduct activities (e.g., recreational, educational) for the elderly. Create and publish an article on your experience. PE, OE
- Research activities which address the social, emotional, mental, and physical needs of a four-year old. Plan and implement a variety of appropriate activities in a nursery school program. PE, OE, P
- Write an article for the school newspaper regarding the risks of premarital sex. P

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Goal 2: Apply Core Concepts and Principles

Learner Outcome 2.2: Students identify, compare, and contrast *patterns* and use patterns to understand and interpret past and present events and predict future events.

Learning Links: Music / Language / Tangrams / Sentences / Quilts / Time / Statistics / Square Dance / Habits / Symmetry / Puzzles / Trends / Ethnicity

Related Concepts: Laws of Nature / Organic Cycles / Inorganic Cycles / Mathematical Patterns

Elementary Demonstrators

- Make predictions (extrapolate and interpolate) based on patterns.
- Demonstrate relationships among patterns.
- Recognize, describe, and create patterns (e.g., repeating, developmental, behavioral, symmetrical, cyclical) of objects or events.
- Classify objects according to more than one property or attribute.
- Classify objects according to one property or attribute.
- Identify and communicate common attributes of items in a group.
- Use senses to observe items; communicate similarities and/or differences.

Middle School Demonstrators

- Investigate the relationships and interactions of two or more patterns.
- Investigate the existence of small-scale variations within a large-scale pattern.
- Formulate a pattern which represents an observed set of occurrences (e.g., data tables, equations).
- Analyze collected data to discover patterns and predict outcomes.
- Identify causes of observed patterns.

High School Demonstrators

- Predict trends or events given sets of long-term or systemic data, and evaluate outcomes.
- Evaluate and represent possible correlations between sets of observed data.
- Demonstrate interrelationships among multiple cycles and one or more rhythms.
- Represent patterns using mathematical expressions.
- Compare and contrast regular, irregular, and cyclic patterns.

Demonstrators should be read from bottom to top, but need not be demonstrated sequentially.

Sample Teaching/Assessment Strategies:

Collaborative Process • **Community-Based Instruction**: Networking, Field Studies • **Continuous Progress** **Assessment**: Portfolio Development, Performance Events/Exhibitions • **Problem Solving**: Inquiry, Formulating Models, Research, Interviews, Surveys, Polls • **Technology/Tools** • **Whole Language Approach** • **Writing Process**

These sample strategies offer ideas and are not meant to limit teacher resourcefulness. More strategies are found in the resource section.

Ideas for Incorporating Community Resources:

- Have the local agriculture extension agent lead your class on a field study of erosion patterns and prevention.
- Invite a police investigator to the classroom to discuss DNA fingerprinting, patrol patterns, crime investigation, and composite photos.
- Utilize courthouse records to study shifts in local population patterns to predict future trends.

Core Concept: Patterns

Sample Elementary Activities

- Create sounds using natural or man-made objects and then try to duplicate those sounds using different objects. Group the objects by similarity of sound produced and identify the characteristics the objects have in common. PE, P
- Vary the volume of water in a bottle to determine the effect on the pitch produced. Use findings to predict the pitch produced by an untested volume of water. PE
- Create a symmetrical pattern (e.g., quilts, paper snowflakes, attribute blocks) after studying other patterns. PE
- Study a stack of cubes with a pattern and predict the cubes that could be added at the beginning and end of the sequence. PE, CE
- Collect items in nature that have a definite pattern (e.g., spider webs, leaves, fish scales) and design a classification system. PE, P
- Investigate patterns related to human activities (e.g., climate, sleeping habits, schedules) and represent them using computer graphics. PE, P
- Obtain five photos taken or selected at random. Create a story, poem, or song about patterns discovered in the pictures. PE, CE, P

Applications Across the Curriculum

Language Arts
- Illustrate a calendar with poems reflecting moods during the year. P

Mathematics
- Observe and compare geometric patterns in nature. Find examples of the patterns in manufactured items or architecture. PE

Social Studies
- Examine and classify patterns found in rural and urban settings. PE

Arts and Humanities
- Make rubbings of items collected on a nature walk and describe the patterns discovered. PE
- Create a sound pattern using rhythm instruments. PE

Practical Living
- Interview family, friends, and neighbors for past and present recycling behavior. Predict future environmental impact based upon the trend. PE, P
- Use a microscope to observe patterns made by the weave in different kinds of fabric. Test the strength of the fabrics. PE, P

Vocational Education
- Identify characteristics of eroding and non-eroding terrain. Suggest actions to correct the erosion. PE
- Survey a multi-generational family's history of the incidence of tooth decay. Hypothesize and analyze differences between generations. P
- Brainstorm ways patterns of family life change as the seasons change (e.g., food, clothing, family activities). PE, CE

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Core Concept: Patterns

Sample Middle School Activities

- Use a spreadsheet to record and tabulate data showing the following relationships: (1) time of day to temperature, and (2) time of day to kilowatt hours of electricity used in your home or school. OE, P
- Collect, display, and analyze data showing relationships among age, gender, and growth of humans from ages 6 to 40. PE, OE, P
- Determine and compare relative densities of different objects (e.g., lead, wood, oil, plastic). Display findings using computer graphics. Analyze observed patterns. PE, P
- Predict the weather using data collected from observations and measurements. Include investigations about the relationship between cloud type and air pressure. Display findings. PE, P
- Construct a shadow stick (gnomon) and measure shadows generated. Graph the data using computer graphics. Make inferences or predictions using the information. PE, P

Applications Across the Curriculum

Language Arts
- Collect random observations from a walking tour. Classify the observations by one or more characteristics or properties. Display the observations and/or the classification system. PE, P

Mathematics
- Create a model of rabbit population growth to predict the number of rabbits after ten seasons. PE, P

Social Studies
- Analyze and chart economic patterns and cycles in American history, and explore interrelationships with concurrent political events. P
- Build a model rocket with a camera in the capsule. Use the rocket to photograph a land area. Examine the geographic features and create a scale model of the landscape from the photograph. PE, P

Arts and Humanities
- Create a museum display depicting or illustrating patterns evident in music, art, cultures, literature, drama, and dance. PE, P
- Draw visual patterns that you discover in nature (e.g., sedimentation layers, waves, crystals, honeycombs). PE, P

Practical Living
- Graph smoking and nonsmoking trends in the United States for the past 50 years. Analyze correlations in the research. OE, P
- Research the causes of the cycle of violence in relationships (e.g., dating, marriage, family). Investigate ways and means of breaking the violence cycle. Present findings to others (e.g., poster campaign for school awareness, article in school newspaper). P

Vocational Education
- Build a small motor and report on the effects of the magnetic field that cause the motor to run. PE, P
- Design disposable, environmentally safe packaging for an existing product. PE, P

Core Concept: Patterns

Sample High School Activities

- Predict future trends for environmental qualities (e.g., temperature, ozone, pollution) from evaluations of research data collected over a 100-year period. Access through telecommunications and CD-ROM. PE, P
- Determine the location of the epicenter of an earthquake by monitoring P and S wave patterns using a computer simulation. PE
- Predict oil consumption over a 100-year period using at least three different rates of increase by manipulating data recorded on a spreadsheet. PE, P
- Prepare a database to access information about chemicals found in the chemistry lab. Use software accessing MSDS (Materials Safety Data Sheet) forms to support the database. P
- Illustrate biological succession in your community (e.g., old field succession, pond succession, community succession) by producing a video. P

Applications Across the Curriculum

Variations on a theme: Urban Concepts

Language Arts
- Investigate and compare behavior patterns of literary characters who live in urban settings. Use literature from two distinct periods in history. PE, OE, P

Mathematics
- Design and conduct a survey on population growth and/or population shifts in selected urban areas. Process and report the information using a database. P

Social Studies
- Chart the changing nature of urban development (e.g., economic adjustments, territorial growth, demographic shifts). PE, OE, P

Arts and Humanities
- Create a museum display representing shifting urban population patterns. Include examples from music, art, literature, drama, and dance. PE, P

Practical Living
- Review typical urban family life cycle from time periods at least a century apart. Prepare a personal life cycle and compare it to those studied. PE, OE, P

Vocational Education
- Investigate trends in job types and availability in urban areas. OE, P

Reflections

Studying patterns gives students an awareness of the consistency of the universe. It establishes the basis for recognizing relationships, such as cause-and-effect and sequencing. Patterns are everywhere, and it is vital that students learn to make the connections necessary to see patterns and relationships. Some patterns, like the shapes of maple leaves from tree to tree, are obvious. Sometimes patterns are more elusive, such as the study of the pattern of ozone depletion geographically and over time.

As learners, students should be aware of constantly shifting and sorting information received through the senses, arranging and rearranging it in order to make connections. In this way, sorting and shifting, creating meaningful pictures of how things repeat, and looking for the way things are predictably connected, students seek and use patterns not only to learn new information, but also to interpret their world.

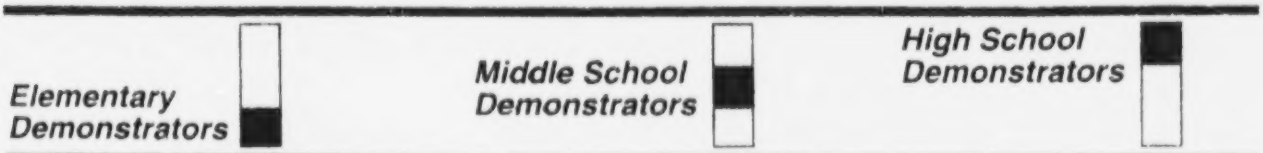
Vocational Ed.

Goal 2: Apply Core Concepts and Principles

Learner Outcome 2.36: Students demonstrate strategies for selecting *career-path* options.

Learning Links: Self-assessment / Labor Market Trends / Prediction / Trends / Community Service / Self-fulfillment / Adaptability / Teaming / Continuing Education

Related Concepts: Interest/Abilities/Aptitudes / Multiple Life Roles / Career Opportunities & Trends / Characteristics/ Requirements of Occupations / Career Planning / Career Diversity/Change / Economic Opportunities



Demonstrators should be read from bottom to top but need not be demonstrated sequentially.

- Compare different careers to determine the various requirements.
- Analyze and compare how different careers affect life roles (e.g., parent, spouse, community leader).
- Relate school studies to life pursuits.
- Examine and group careers found in the community.
- Communicate the concepts of work and career.
- Evaluate a preliminary, personal career plan.
- Assess personal strengths, interests, and abilities.
- Analyze the relationship between educational achievement and career opportunities.
- Demonstrate knowledge of the interrelationship of life roles, lifestyles, and careers.
- Explore career options in different occupational clusters and geographic areas.
- Make and defend a personal career choice.
- Appraise characteristics and requirements of personal career options; evaluate effects on lifestyles and multiple life roles.
- Analyze, interpret, and evaluate present and future job markets.
- Assess personal performances and interests; integrate assessment results in career planning.
- Analyze the interrelationships of school and work experiences to life goals and career planning.

Sample Teaching/Assessment Strategies:

Collaborative Process: Brainstorming, Cooperative Learning • **Community-Based Instruction**: Mentoring/ Apprenticeship/Co-op, Shadowing • **Continuous Progress Assessment**: Anecdotal Records, Interviews, Observations, Portfolio Development, Performance Events/Exhibitions • **Problem Solving**: Brainstorming, Inquiry, Investigation, Case Studies, Creative Projects, Interviews • **Technology/Tools**: Computers, Calculators, Interactive Video, Multimedia, Videotaping, Telecommunications • **Whole Language Approach** • **Writing Process**

These sample strategies offer ideas and are not meant to limit teacher resourcefulness. More strategies are found in the resource section.

Ideas for Incorporating Community Resources:

- Shadow individuals on the job in the community and evaluate their careers based on pre-established personal criteria for a "good job."
- Invite a representative from an employment agency or placement firm to discuss present and future job opportunities at local, state, and national levels.
- Invite employers and representatives from universities and colleges, technical schools, and military branches to participate in a career fair.

Core Concept: Career Path

Sample Elementary Activities

- Use technology to investigate the educational and skill requirements of different careers. Present a visual to the class. PE, OE
- Interview family, neighbors, and school personnel to identify the demands their careers make on their personal time. Decide how this might impact their family roles and pursuit of personal interest. PE, OE
- Investigate how individuals in jobs use mathematics, science, reading, writing, and social studies in their work. Communicate through graphs and charts. PE, OE
- Collect real objects or tools used in specific careers in your community. Use your collection to group the careers into like categories. PE, OE
- Plan and participate in a hat day that illustrates different careers. PE
- Complete a series of chores over a one-week period. Discuss the differences between work and play. PE, OE

Applications Across the Curriculum

Language Arts
- Review career opportunities in local and statewide newspapers; classify the opportunities on a chart. PE, OE
- Compose a story about working in a career you have investigated. OE

Mathematics
- Use advertisements from local newspapers to compare the salaries of a number of occupations. Graph or chart your findings. PE, OE
- Explore careers (e.g., architect, sculptor, graphic designer) in which the use of shapes and models is an important part. OE, P

Arts and Humanities
- Compose a rap or other musical piece to describe the challenges of a career. PE, OE

Science
- Categorize the science related "Help Wanted" advertisements. Graph and share the results. PE, OE

Social Studies
- Interview employees in various "judicial system careers" to determine their roles in ensuring due process. PE, OE

Practical Living
- Interview someone who works to determine the relationship between his/her occupation and lifestyle. Report your findings. PE, OE
- Research the number of people playing professional basketball and high school basketball. Discuss the actual opportunities in professional sports. OE, P

Core Concept: Career Path

Sample Middle School Activities

- Develop an Individual Career Plan (ICP) to determine courses for the freshman year. PE, OE
- Complete a range of assessment activities to identify strengths, interests, and abilities. Develop a personal profile. PE
- Survey individuals in various careers; graphically present the correlation between educational achievement and career opportunities. PE, OE
- Gather data (e.g., income, working conditions, continuing education requirements) about a number of careers which interest you. Using the data, develop a multimedia presentation which shows how career choice impacts lifestyle. PE, OE, P
- Initiate a one-day career exchange program with local community members. PE

Applications Across the Curriculum

Variations on a theme: Career Day

Language Arts
- Write letters inviting representatives from a variety of careers and institutions to participate in a "Career Day" in your school. OE

Science
- Design posters to be displayed at each booth which illustrates how that career has changed over time. PE, OE.

Mathematics
- Calculate the cost per student to each institution who sponsored a representative. OE

Social Studies
- Develop an assessment instrument and evaluate the use of democratic principles used by the group during the planning process for the "Career Day." PE, OE

Arts and Humanities
- Videotape, edit, and broadcast a tape with highlights of the "Career Day." PE, P

Practical Living
- Research stress and other health-related threats associated with each career exhibited; prepare bar graphs for display or dissemination on "Career Day." OE

Reflections

Stop the average high school senior in the hall and ask what he/she plans to do after graduation and the likely response will be, "Go to college." But, further questioning about the specifics will reveal that the student simply realizes the end of high school is nearing and he/she must do something afterwards; no thorough planning has occurred in making the decision.

Traditionally, instruction has focused intently on isolated, discrete facts/skills for twelve years with little regard for life beyond schooling. As early as primary school, students should begin to make connections between school and work. In adult society, work is viewed as a means of becoming a self-sufficient, contributing member of the community; yet little emphasis is placed on careers and career planning throughout elementary, middle, and high school. It is just suppose to happen.

The selection of a career path is dependent on so many variables, it often becomes an elusive process for many young people. Even adults who are proceeding along on a well-worn career path will often joke about what they want to be when they "grow up." Settling on a career option is complex and students need much guidance in this area. They must consider not only their interests, but also their aptitudes, which encompass their talents, skills, and attitudes.

You must do whatever you can to help prepare students to make career decisions beyond schooling. Cross-curricular instruction that connects content to work experiences is a natural strategy to use when working toward this outcome.

Sources: Fogarty & Haack—Future World, Future School
Fogarty & Bellanca—Patterns for Thinking, Patterns for Transfer

Core Concept: Career Path

Sample High School Activities

- Complete an individual Career Plan (ICP) for your immediate future. Justify your plan. OE, P
- Develop a multimedia presentation depicting a new trend in an established career. P
- Explore the changing role of the military and its ability to provide jobs. Deduce changes in skills required to be a soldier of today as compared to 50 or 100 years ago. OE
- Generate a database of present and future job markets. Make an "endangered species" list of jobs and/or careers. PE
- Shadow an individual employed in a career that interests you. Project yourself in that role; illustrate/explain how certain characteristics you possess would meet those required in the career and how others would need to be strengthened. OE, P
- Modify the current Individual Career Plan (ICP), throughout high school years, using the career portfolio. PE, OE
- Interview employment counselors or personnel directors to determine the impact of school and work experiences on career planning.
- Use the results of your personal assessment surveys to select four or five career options. Investigate the characteristics and requirements of each. Prioritize the options based on how each might affect your lifestyle and multiple life roles. PE, OE

Applications Across the Curriculum

Language Arts
- Interview employers in the community and analyze the relationship between work and school. P
- Write letters to selected colleges/universities about an educational program for a chosen career. P

Mathematics
- Develop a statistical database on current and predicted career opportunities in an occupational cluster. P

Science
- Investigate and present careers that utilize a specific scientific technique (e.g., gene splicing, titration or remote sensing). OE, P
- Analyze the impact of extended life span on society. Predict the resulting effects on career opportunities for young people. OE

Social Studies
- Investigate careers in a specific occupational cluster; place each career on an international map to show where it is concentrated. PE
- Research and develop a board game showing how strengths, interests, and abilities will affect career choices in the social studies area. PE, OE, P

Arts and Humanities
- Design a multimedia presentation on a selected career. PE

Practical Living
- Interview individuals (e.g., sports broadcasters, coaches, athletic trainers, physical therapist, fitness center owners/instructors, YMCA/YWCA directors, camp directors) who participate in careers linked to physical activities. Investigate employment opportunities and educational requirements for these careers. OE, P
- Tour Kentucky Tech Centers to observe and collect information about different technical training programs. PE

1992-93 KIRIS COMMON OPEN-RESPONSE ITEM SCORING WORKSHEET

Grade 12 – Social Studies Question 1

(Learner outcomes covered by this item include: Goal 2, structure and function of social systems.)

1. Over the past 50 years, there has been a shift in the population from rural to urban living. This has had a tremendous impact on American cultural values, which in turn has had an effect on society, family, and the individual. For each of these three areas (society, family, individual), discuss what these effects are and give advantages and disadvantages of each.

OPEN-RESPONSE 1

SCORING GUIDE

4	Student gives more than one advantage and disadvantage for each effect using historical or cultural examples.
3	Student gives more than one advantage and/or disadvantage for each effect.
2	Student gives one advantage or disadvantage for each.
1	Student discusses the effects population shifts have had on society, the family and the individual, but is unable to show any advantages or disadvantages.
0	Blank

MODEL ANSWER (LEVEL 4)

ADVANTAGES	DISADVANTAGES	Student's response may point to larger general issues such as:
greater access to goods and services	breakup of the nuclear family	change in region voting patterns
more opportunities for work	cost of living increases	change in representation in the House of Representatives
access to better educational systems	urban congestion	
access to mass transportation	greater incidence of violence	
more cultural diversity	clash of cultural values	

EXAMPLES OF STUDENT RESPONSE* FOR EACH SCORING GUIDE LEVEL

4	The urbanization of America has irreversibly altered the lifestyle of America. No longer are we a nation of farmers. Instead, we are a nation of city dwellers, and values have shifted with the population. Society now moves at a faster pace; news, products, and people move quicker than they did in the past. This can be benefitical or determental. More can be produced and transported, but are these goods of the best quality? News travels faster, but it can bring horror into our living rooms. "Family values", that oft-used phrase, have indeed changed. Few families have more than seven children, single-parent families are increasing, and "split" (stepparent) families are becoming more common. While these "family values" alter, it is not necesarily wrong. Families change as society changes. Perhaps the greatest result of urbanization is the adaption of the individual to a fast paced world. People may not always know their neighbors, but they learn and experience more in cities. They may not always be safe, but they have more opportunities to better themselves. Sacrifice--trading something for something else. Such is the cost of urbanization.
3	The population shift has drastically altered American cultural values. American society has become more diverse, in every city, there are more groups who share unique interests. More distinctions exist between different classes of people. Family values have changed, for urban life does not promote traditional living. Young men and women have a new set of morals that condone premarital sex and other nontraditional practices. There are more single, self-supporting mothers, and a higher rate of divorce due to this population shift. Individuals are more independent in the city, for their cultural values call for them to be self-reliant above all else.
2	The advantages for the society, family and individual is more people will be around them and their society will be bigger. The disadvantage is it will be harder because there is more people and less jobs.
1	Urban living has had an effect on all of the population. It is a horrible site. The ural people live in poverty. The families are effected by the lack of jobs.

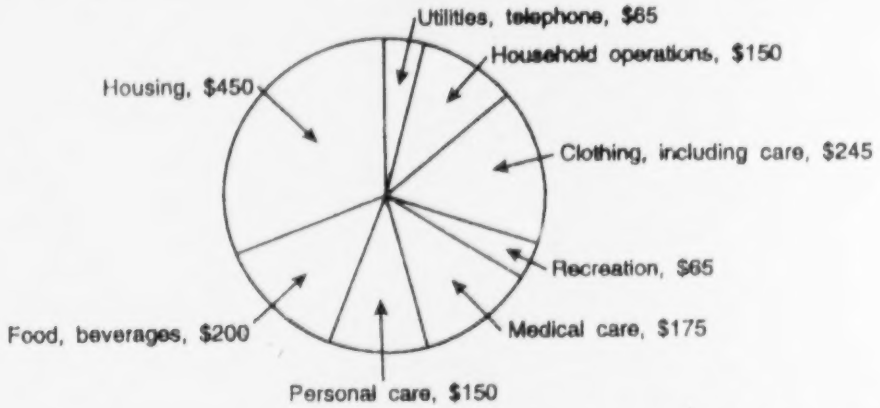
*** Wherever typed student responses appear, student errors have not been corrected.**

1992-93 KIRIS COMMON OPEN-RESPONSE ITEM SCORING WORKSHEET

Grade 12 – Social Studies Question 2

(Learner outcomes covered by this item include: Goal 2, social studies and inquiry skills.)

2. You are living on an income of $18,000 a year. Each of your expenses is fixed monthly according to the graph which is shown below.



You want to purchase a new car. The payments for that car will be $199.00 a month. You do not, however, wish to alter your lifestyle too much. How would you reallocate your money in order to accommodate the purchase of a new car, and still maintain a standard of living close to what you had before the purchase? In your answer, please describe where the money will come from in your budget and what areas will be affected. Remember, you cannot change some of your expenses such as medical care, housing, etc.

OPEN-RESPONSE 2

SCORING GUIDE

4	Student gives plausible solution that demonstrates understanding of budgets and shows reallocation of funds allowing for purchase of a vehicle. Student explains why he/she chose to change the budget for the items they did.
3	Student gives plausible solution that describes where the money will come from and what areas will be affected.
2	Student gives solution involving personal budget; however, it involves changing fixed items in the budget (e.g., housing or medical), **OR** cutting money from some item that cannot be reduced that much.
1	Student gives solution unrelated to personal budget (e.g., ask parent for loan, or take out loan), **OR** answer is totally incorrect.
0	Blank

EXAMPLES OF STUDENT RESPONSE* FOR EACH SCORING GUIDE LEVEL

4	1. By using coupons & looking for bargains you can take out $50 you spend on food 2. By finding inexpensive ways to spend leisure time you can take $45 out of your recreation money 3. by cutting back on new clothes bought you were able to take $104 out of clothing fund This amount will pay for the car payment and additional money need for gas & insurance can be taken out of clothing and some out your household operations.
3	In an effort to pay for a car and still maintain my present way of life, I have decided to lower some monthly expenses. Clothing is down from $245 to $100. With $100 I could buy one major article or several smaller ones. Personal care is down $50 to $100. Also, recreation is down $15. This gives me $210 to buy a car. With the extra money I will save, I can save for any unforeseeable problems.
2	Take your recreation, $50 out of food. $50 out of personal care, and have your phone taken out.
1	I would get a loan from the bank. Then I would balance my budget with less money to spend on clothing. Try to save on the utilities. And come up with enough for my payment.

* Wherever typed student responses appear, student errors have not been corrected.

1992-93 KIRIS COMMON OPEN-RESPONSE ITEM SCORING WORKSHEET

Grade 12 – Science Question 4

(Learner outcomes covered by this item include: Goal 2, nature of scientific activity, evolution, patterns.)

4. A few years ago, scientists collected seeds from a particular type of tomato plant. Half of the seeds were kept on earth while the other half were sent to outer space in a shuttle and remained in space for a long period of time. Anyone interested was given some of the "earth seeds" and some of the "space seeds" for experimentation.

   Suppose you were given some of each type of seed. List all of the variables you could control in designing an investigation using the seeds.

   If all of the variables you listed were controlled, what hypotheses or research questions would the investigation test?

   What kinds of data would need to be collected to test these hypotheses?

OPEN-RESPONSE 4

SCORING GUIDE

4	Lists variables **AND** gives hypothesis/research questions **AND** tells what data to collect, all responses are logical and accurate
3	Lists variables **AND EITHER** gives hypotheses/research questions **OR** tells what data to collect, responses are logical and accurate (may have the third section present but vague and inaccurate)
2	Lists variables **AND** gives hypotheses/research questions **AND/OR** tells what data to collect (responses are vague, inaccurate)
1	Completely wrong **OR** simply lists variables **OR** hypotheses/research questions **OR** data to collect
0	Blank

EXAMPLES OF STUDENT RESPONSE* FOR EACH SCORING GUIDE LEVEL

4	There are many variables that one can control when given seeds from earth and outerspace. You could controll the amount of sunlight each seed recieves, the amount of water each seed recieves, the temperature each seed recieves, the amount of fertilizer each seed recieves, and how deep each seed is planted. By using this controlled variable situation; one could plant space seeds and controll seeds from earth, and see if the space exposure affected the seeds any. This test would show weither or not prolonged space exposure causes mutations in plants or any other change in the way the plant works, like the plants reproductive cycle. During this test one would check everyday for height, amount of plants grown, coloring, and structural features on both the controll and space plants.

3	I would make sure all the seeds were planted at the same time, in the same plot of soil, with the same amount of water, food, and sunlight. If one set of seeds got something, the other set would get the same things. I would be testing how the seeds kept in different planets yielded tomatoes. I would grow them and then when I got tomatoes I would compare them.

2	control: soil type, temperature, amount of water, amount of light The Investigation would test if being in outer space had any effect on the seeds You would need to collect data regarding the plants growth patterns

1	You could control their water and food, amount of sunlight that they get. The temperature they are kept at. These things would test how well the seed grew.

***Wherever typed student responses appear, student errors have not been corrected.**